

Overcoming "Cloud Creep"

**Bringing Governance to an Existing Cloud at
NASA's Jet Propulsion Laboratory**

Jonathan Chiang – IT Chief Engineer



Agenda



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- Key benefits in using the cloud
- Understand JPL use cases
- Describe JPL's early engagement with Amazon Web Services
- Review JPL's implementation of its governance plan
- Utilizing governance to achieve organizational efficiency
- Measuring the value



Key Benefits



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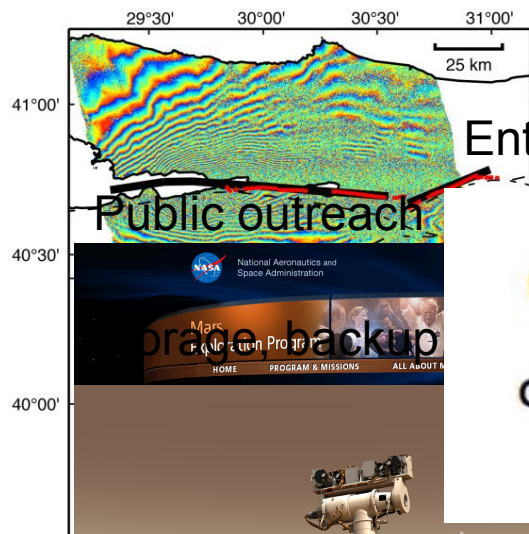
- Quick and easy to provision/de-provision
- Reduce capital expense and large initial investments
- Pay as you go, only for what you use
- Automation and reusability



How JPL Uses Cloud



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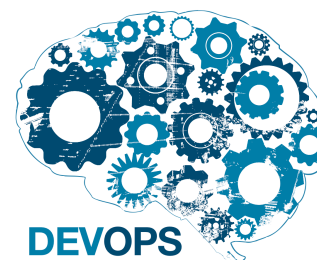


HPC/data processing

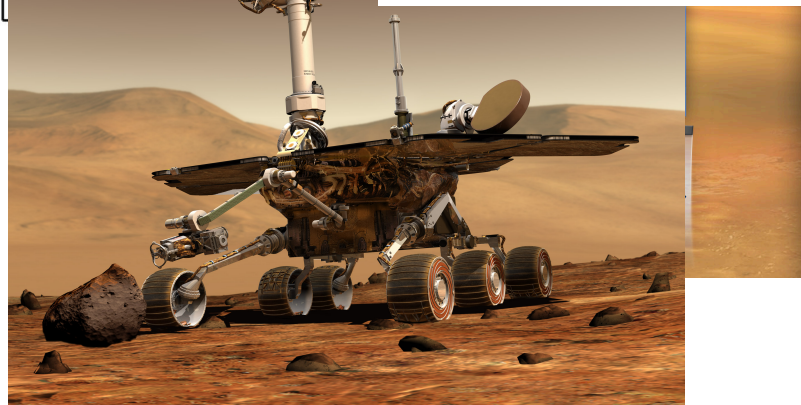
Enterprise applications



Rapid development



[Mars.jpl.nasa.gov](https://www.nasa.gov/mars/jpl)
[Eyes.nasa.gov](https://eyes.nasa.gov)
[Eyes.jpl.nasa.gov](https://eyes.jpl.nasa.gov)
[Nightsky.jpl.nasa.gov](https://nightsky.jpl.nasa.gov)





Early Cloud Engagement (AWS)



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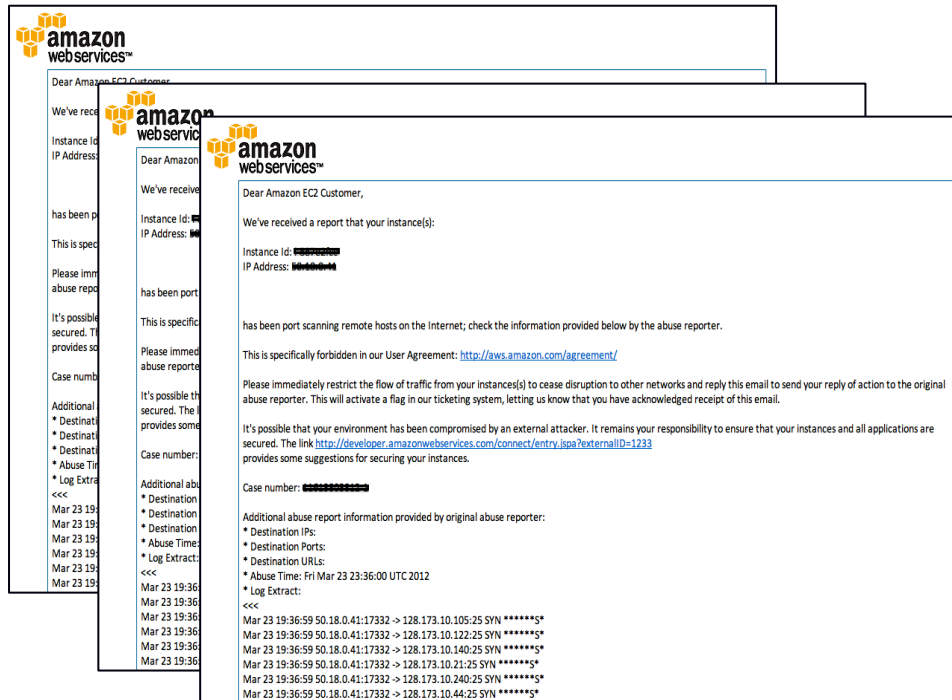
- Issued 60+ root level AWS accounts to various project teams
- Added all accounts to consolidated billing
- Associated a single project/task number for charge back and bill back



The Problems Began



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- All users had full administrative console and API access to the interface
- JPL Cyber Security had no ability to audit the resources running
- Security incidents (AWS abuse reports) were sent directly to the account owner



Key Principles of JPL's Governance Model



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1. Understand your users and their use cases
 - Identify the services they will be utilizing
 - Do any of the services conflict with institutional offerings? Do they interface with existing services?
2. Apply policy and accountability
 - Ensure roles and responsibilities are understood
 - Define and deploy a clear account management model
 - Identify training needs and opportunities
 - Create a hosting or provisioning account



Key Principles of JPL's Governance Model



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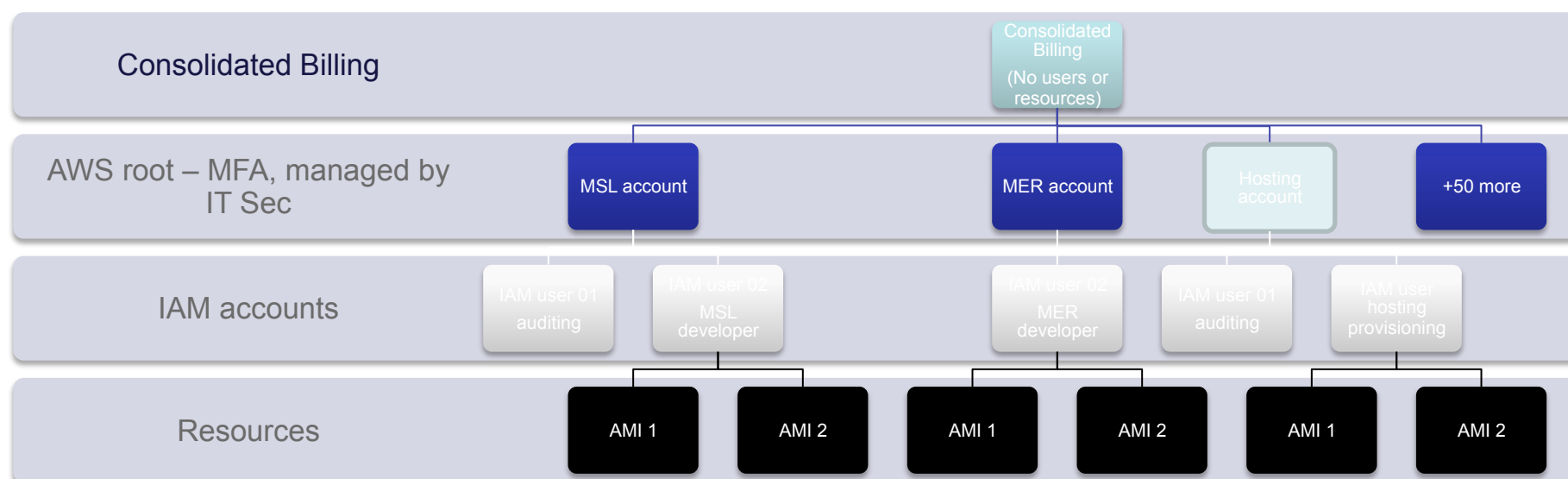
3. Provide auditing and traceability
 - Create “describe” API roles in each account
 - Enforce tagging policy for shared accounts
 - Create a security response and forensics plan
4. Leverage an iterative implementation
 - The cloud is agile enough to conform to a changing governance model
 - Don't wait for to implement all aspects of governance before using the cloud
5. Develop a cloud cost management plan
 - Understand what costs can or cannot be allocated through chargeback and showback
 - Utilize 3rd party tools (Cloudability, Teevity, etc.)
 - Enable spending quotas and alerts
 - Leverage Reserved Instances/Reserved Capacity for persistent applications



Account Management



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Achieving Organizational Efficiency



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- Automated configuration management
- Monitoring, notification, escalation
- Networking and security operations
- Verification and validation





Measure the Value



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- Calculate the cost of implementing governance along with the cost of cloud resources
- Consider the benefits of organizational efficiencies gained by cloud and governance
- Compare agility and speed to market vs. adoption of governance



Q&A



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Thank you!